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New record of *Rineloricaria daraha* Rapp Py-Daniel & Fichberg, 2008 from Rio Paca, upper Rio Negro, Amazon River basin

Juan David Bogotá-Gregory[1, 2*], **Francisco Provenzano**[3], **Astrid Acosta-Santos**[1] and **Edwin Agudelo Córdoba**[1]

[1] Instituto Amazónico de Investigaciones Científica-SINCHI, Grupo de Ecosistemas Acuáticos, Avenida Vásquez Cobo entre calles 15 y 16, Leticia, Amz, Colombia
[2] University of Central Florida, Department of Biology, 4000 Central Florida Boulevard, Orlando, FL, USA 32816
[3] Universidad Central de Venezuela, Facultad de Ciencias, Instituto de Zoología y Ecología Tropical, Centro MBUCV, Laboratorio de Ictiología, Apartado 47058, Los Chaguaramos, Caracas, Venezuela
* Corresponding author. E-mail: juandbogota@gmail.com

Abstract: The geographic distribution of a catfish of the family Loricariidae, *Rineloricaria daraha* Rapp Py-Daniel and Fichberg, 2008, which was only known from its type locality within the Rio Daraá, Brazil, is extended here within the Rio Negro basin to Colombia. This new record from Colombian territory is more than 700 km apart, in hydrological distance, from previously recorded locality in the Rio Daraá. Illustrations of diagnostic characters and morphometrics are provided based on Colombian specimens.

Key words: Amazonian catfish; Loricariidae; Vaupés; South America

The Neotropical armored catfish family Loricariidae is the most diverse family of the order Siluriformes containing almost a thousand valid and recognized undescribed species (Reis et al. 2003; Covain and Fisch-Muller 2007; Lujan and Armbruster 2012). Loricariids are widespread in the tropical freshwaters of South Central and South America. A body covered by bony plates and the modification of the mouth structure into a sucker disk characterizes them (Lujan and Armbruster 2012). Anatomical modifications of the mouth of the members of the Loricariidae family enable them to adhere firmly to substrate in different kinds of habitats, even those with high water flow. Furthermore, these mouth modifications allow them to feed on different items that are found on the substrate such as algae, small invertebrates, detritus and wood (Covain and Fisch-Muller 2007). The subfamily Loricariinae can be distinguished from other loricariids by their long flattened body and caudal peduncle, and the absence of an adipose fin (Covain and Fisch-Muller 2007). Within the subfamily Loricariinae, the most diverse genus, *Rineloricaria,* comprises more than 60 valid species that can be found in a great variety of habitats (Reis et al. 2003; Ferraris 2007; Fichberg and Chamon 2008; Ghazzi 2008; Ingenito et al. 2008; Rapp Py-Daniel and Fichberg 2008; Rodriguez and Miquelarena 2008; Rodriguez and Reis 2008). *Rineloricaria* species are identified by the combination of the following morphological characters: Caudal fin with 10 unbranched rays; short maxillary barbels, not reaching the origin of pectoral fin; papillose lips; teeth clearly bifid, with more than five in each hemimandible; mouth and oral cavity without ornamentation; belly completely covered with plates in most species, partially covered in others, and shows an ample variation in body size, shape, color pattern, arrangement of the abdominal plates and disposition of their sexual dimorphic odontodes (Vera-Alcaraz et al. 2012). Within *Rineloricaria, R. daraha* can be distinguished by its particular long digitiform papillae on the ventral surface of the lower lip (Rapp Py-Daniel & Fichberg, 2008). This species was only known previously from its type locality at the Rio Daraá, Rio Negrobasin, Brazil. Here we provide data for increasing species natural distribution range within the Rio Negro basin, from specimens collected in the Río Paca in Colombia. Specimens vouchers are deposited in the Colección Ictiológica de la Amazonia Colombiana-CIACOL of the SINCHI institute.

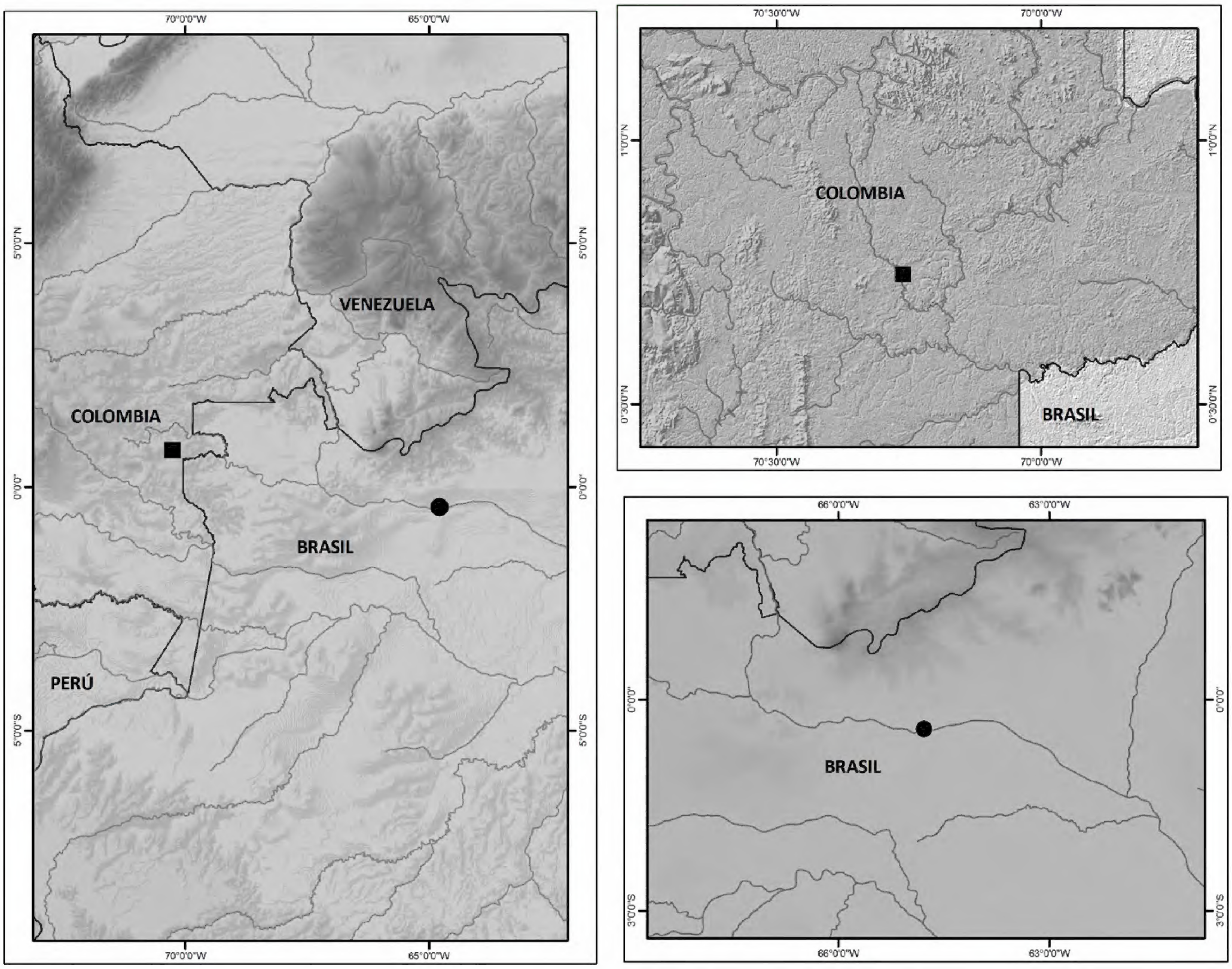
During the development of the fieldwork of the research program "Investigación en Ecosistemas y Recursos Naturales de la Amazonia Colombiana 2009–2012", funded by the SINCHI Institute, two specimens of *R. daraha* were collected. Fishes were captured in November 2012 with a pisá (Figure 1), at the Muela waterfalls in the Río Paca (00°44′46.8″ N, 070°15′37.2″ W), Vaupés department, Colombia (Figure 2). Specimens were

deposited at the Colección Ictiológica de la Amazonia Colombiana-CIACOL of the SINCHI Institute, and cataloged with the number 849- CIACOL.

Figure 1. Art of artisan fishing "pisá".

Rineloricaria daraha is easily diagnosed from all congeners by presence of seven branched rays on the pectoral fin (*vs.* generally six), surface of the lower lip with long digitiform papillae (*vs.* generally short and thick, Figures 3–4a), and by a peculiar shape of the preanal plate (Figures 3–4b). In addition to those diagnostic characters mentioned already above, morphometric characters were measured and counts were taken (Table 1), and these were compared with the published data on the type material (Rapp Py-Daniel and Fichberg, 2008), but we found no considerable differences between specimens from Brazil and Colombia.

According to Rapp Py-Daniel and Fichberg (2008), *R. daraha* was only known from the rapids of Rio Daraá and represents a species of the genus that inhabits upper and middle portions of the Rio Negro basin in which waterfalls are abundant (Goulding et al. 1988). These waterfalls include a variety of microhabitats for fishes that are anatomically adapted to life in turbulent waters. Fishes that are capable to support strong currents graze aquatic plants, algae and invertebrates found in the holes between and surface of waterfall rocks. This may



Figures 2. Records of *Rineloricaria daraha*. Dot represent type locality at Rio Daraá, Brazil; square represents the new record at Río Paca, Colombia.

Figures 3. *Rineloricaria daraha* (849-CIACOL, larger specimen), **a:** Dorsal view, **b:** ventral view, **c:** lateral view.

explain, in part, why this type of system, which have been identified as ecotone (Torrente-Vilara et al. 2011) host endemic forms such as *R. daraha*. *Rineloricaria daraha* was only known from its type locality within the Rio Daraá, Brazil (Rapp Py-Daniel and Fichberg 2008). Here its distribution is expanded to include the Rio Negro basin, Colombia, which suggests that its distribution range could be over a wider area. Although it could be described as a rare species, waterfalls, where the species inhabits, are difficult aquatic systems to sample. Four species of *Rineloricaria* were collected at the Río Negro basin (in the main channel and its tributaries, Casiquiare, Baria and Siapa rivers) in Venezuela. These specimens were deposited at the fish collection of the MBUCV and do not match with *R. daraha*, which suggests that *R. daraha* may be endemic or restricted to some localities or habitats within the basin.

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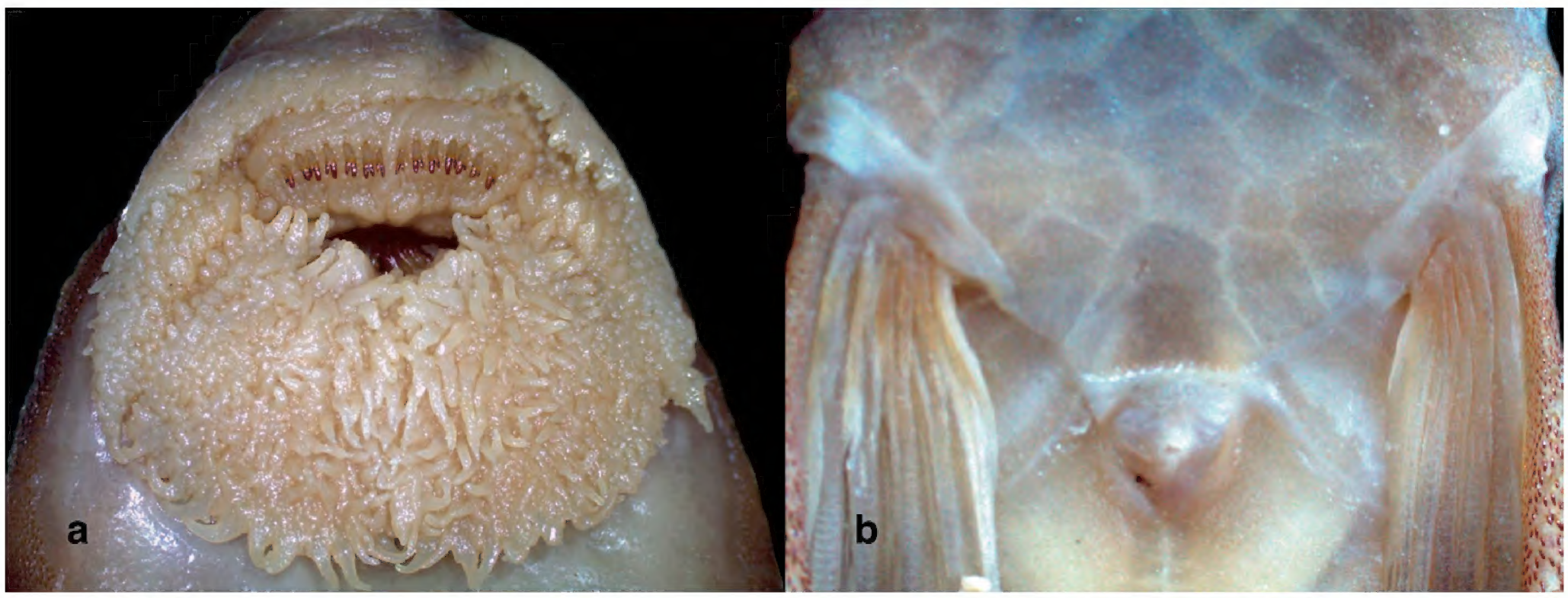

Figure 4. *Rineloricaria daraha* (849-CIACOL). **a: v**entral view of the head. **b:** ventral view of abdominal region.

Table 1. Morphometric characters for *Rineloricaria daraha* from Río Paca, Colombia.

	Specimen 1	Specimen 2
Standard length (mm)	**146.6**	**109.5**
Percents of standard length		
Head length	21.5	22.38
Predorsal length	33.0	33.4
Dorsal-spine length	18.0	18.3
Anal-spine length	15.1	17.5
Pectoral-spine length	15.8	17.7
Pelvic-spine length	13.0	16.8
Thoracic length	7.6	8.9
Abdominal length	10.8	11.5
Cleithral width	16.8	17.3
Body depth at dorsal-fin origin	8.5	8.2
Body width at anal-fin origin	12.1	11.6
Postanal length	51.3	50.5
Percents of head length		
Head width	77.6	82.2
Snout length	58.9	63.0
Orbital diameter	13.9	13.3
Interorbital width	22.9	24.3
Head depth	39.3	40.1
Premaxillary ramus	7.9	7.62

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